GeneAmp® PCR System 9700

Auto-Lid Dual 384 Sample Block Module

User's Manual

Applied Biosystems

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Safety Information 1

Overview

About This Chapter

This chapter provides information to help you safely operate the GeneAmp® PCR System 9700 and the Auto-Lid Sample Block Module.

IMPORTANT Read this chapter before you install the system 9700 and the Auto-Lid Sample Block Module.

In This Chapter

The following topics are covered in this chapter:

Topic	See Page
Symbols and Instrument Labels	1-2
Operating Precautions	1-4
Safety	1-8

Symbols and Instrument Labels

Symbols

The following symbols are used on Applied Biosystems instruments. Whenever such symbols appear on instruments, please observe appropriate safety procedures.

Electrical Symbols

	This symbol indicates the on position of the main power switch.
	This symbol indicates the off position of the main power switch.
	This symbol indicates the on/off position of a push-push main power switch.
	This symbol indicates that a terminal may be connected to another instrument's signal ground reference. This is not a protected ground terminal.
	This symbol indicates that this is a protected ground terminal that must be connected to earth ground before any other electrical connections are made to the instrument.
	This symbol indicates that this terminal either receives or delivers alternating current or voltage.
	This symbol indicates that this terminal either receives or delivers alternating and direct current or voltage.
	This symbol indicates the presence of high voltage and warns the user to proceed with caution.
	This symbol alerts you to consult the manual for further information and to proceed with caution.

Non-electrical Symbols

	This symbol illustrates a heater hazard. Proceed with caution when working around these areas to avoid being burned by hot components.

Instrument Labels

The following instrument labels are on the system 9700 with the Auto-Lid Sample Block Module installed.

	⚠ WARNING Disconnect supply cord before opening. Grounding circuit continuity is vital for safe operation of equipment. Never operate equipment with grounding conductor disconnected. *AVERTISSEMENT: Debrancher le cordon d'alimentation avant d'ouvrir la continuite des masses est essentielle.* *Pour un fonctionnement sans danger. Ne jamais utiliser l'equipment si le fil de terre n'est pas raccorde.*
	⚠ WARNING **HOT SURFACE**. Use care when working around this area to avoid being burned by hot components. *Attention. Surface chaude.*

Operating Precautions

Overview

The following precautions should be taken whenever you operate the system 9700 with the Auto-Lid Sample Block Module installed.

General Use

⚠ CAUTION The instrument should be used according to the instructions provided in this manual. If used otherwise, the protection provided by this instrument may be impaired.

Environment, Humidity, and Temperature

⚠ CAUTION This instrument is designed for indoor use and for altitudes not exceeding 2000 meters.

⚠ CAUTION Do not operate in a Cold Room or a refrigerated area. The system 9700 will operate safely when the ambient temperature is 5 °C to 40 °C (41 °F to 104 °F). The system 9700 will meet performance specifications when the ambient temperature is 15 °C to 30 °C and the ambient relative humidity is 20 to 80%. These specifications have been calculated for altitudes between 0 and 2000 meters.

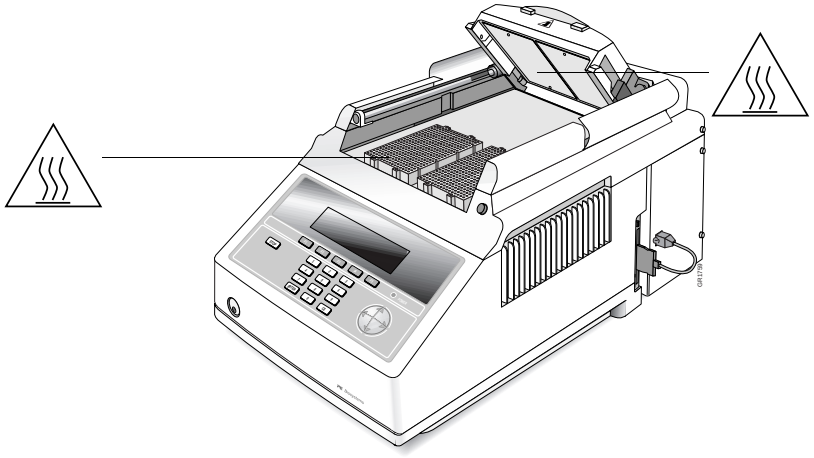
⚠ CAUTION This instrument is not designed for operation in an explosive environment. Do not place the instrument close to potentially explosive materials or objects.

⚠ CAUTION This instrument is not designed for operation with the heated cover retracted when running at 4 °C. If the heated cover is retracted and the instrument runs at 4 °C, water condensation may be excessive in the sample block area.

Sample Block Module

⚠ WARNING **PHYSICAL INJURY HAZARD.** To protect yourself against burns, do not open the heated cover or touch the sample block module when the word Hot displays on the screen. This indicates a sample block temperature above 50 °C.

The hot areas for the Auto-Lid Sample Block Module are shown below.



⚠ CAUTION To protect your samples and to guarantee the best temperature uniformity, keep the heated cover closed at all times, except when loading or unloading samples.

Grounding and Electrical Safety

The system 9700 must be grounded for protection against electrical shock.

⚠ WARNING Do not use an adapter to a two-terminal outlet, since this does not provide positive ground protection.

Refer to the *GeneAmp® PCR System 9700 Base Module User's Manual* (P/N 0993-6247) for more information on electrical safety.

Power Requirements

IMPORTANT You must be able to disconnect the main power supply to the instrument immediately if necessary.

The following table specifies the electrical operating range for the instrument in various parts of the world:

Location	Voltage (VAC)	Frequency	Amperage (A) Nominal
Japan	100 ±10%	50/60 Hz ±1%	3.16
USA/Canada	120 ±10%	50/60 Hz ±1%	4.20
EC	230 ±10%	50/60 Hz ±1%	3.14

Maximum power is 860 VA.

Voltage Quality

Line voltage must be within ±10% of the nominal value. High or low voltages may have adverse effects on the electronic components of the instrument. In areas where the supplied power is subject to fluctuations exceeding these limits, a power line regulator may be required.

Voltage Spikes

Short-duration, high-voltage spikes often cause random failures in microprocessor controlled instrumentation. These spikes can be caused by other devices using the same power source (refrigerators, air conditioners, and centrifuges) or by outside influences such as lightning. A dedicated line and ground between the instrument and building main electrical service are necessary to prevent such problems.

If your environment contains devices that are electrically noisy or you are in an area with frequent electrical storms, a line conditioner with a recommended capacity of 2.0 VA will enhance the reliability of your system. This may be lower depending on the conditioner or power supply design.

Physical Specifications

Weight

Sample Block Module	10 kg (22 lb)
Base Module	8.6 kg (19 lb)

Dimensions (footprint with sample block installed):

Height	26.0 cm (10 in.)
Width	28.0 cm (11 in.)
Depth	46.5 cm (19.5 in.)

Lifting the Instrument

The combined weight of the base module and sample block module exceed 18 kg (41 lb). Lifting or moving the assembled unit should be done with caution.

When lifting or moving a heavy object:

Step	Action
1	Assess the load and pathway of the lift and carry.
2	Ensure that the instrument can be gripped comfortably and securely.
3	Bring the load as close to the body as possible.
4	Keep the head and shoulders up and the upper body erect as the lift begins.
5	Lift with the legs by bending and straightening the knees. **⚠ CAUTION** If a direction change is necessary, don't twist and lift. Instead, move the feet (pivot) .
6	Don't jerk. Lift and move smoothly and slowly.
7	If two or more individuals are involved in the lift, communicate your moves and intentions.
8	Set the object down smoothly, again using your legs to support the weight. Make sure fingers and other appendages are free of the object's weight as it is put down.

Pollution Category

The installation category (overvoltage category) for this instrument is II, and it is classified as portable equipment. The instrument has a pollution degree rating of 2, and may be installed in an environment that has nonconductive pollutants only.

Instrument Storage

The system 9700 must be stored at a temperature between –20 °C and 60 °C (–4 °F and 140 °F) at altitudes ranging from 0–12,000 meters above sea level.

IMPORTANT The system 9700 is guaranteed to meet performance specifications only when the ambient temperature is 15–30 °C and the ambient relative humidity is 20–80% (between altitudes of 0 and 2000 meters).

Communautes Europeennes (CE) Compliance

CE	For our European customers, any product marked with the CE label meets the European EMC directive 89/336/EEC and the Low Voltage Directive 72/23/EEC. This product meets Class A emission limits.

Routine Maintenance for Safe Operation

Before using any cleaning or decontamination method except those recommended in the manual, the user should check with Applied Biosystems to ensure that the proposed method will not damage the equipment.

Maintain your instrument in good working order. In the event that the instrument has been subjected to adverse environmental conditions (such as fire, flood, earthquake, etc.), a service inspection of the instrument should be made to ensure safe operation.

Safety

Documentation User Attention Words

Five user attention words appear in the text of all Applied Biosystems user documentation. Each word implies a particular level of observation or action as described below.

Note Calls attention to useful information.

IMPORTANT Indicates information that is necessary for proper instrument operation.

⚠ CAUTION Cautions the user that a potentially hazardous situation could occur, causing injury to the user or damage to the instrument if this information is ignored.

⚠ WARNING Warns the user that serious physical injury or death to the user or other persons could result if these precautions are not taken.

⚠ DANGER Indicates an imminently hazardous situation that if not avoided will result in death or serious injury.

Chemical Hazard Warning

⚠ WARNING **CHEMICAL HAZARD**. Some of the chemicals used with Applied Biosystems instruments and protocols are potentially hazardous and can cause injury, illness, or death.

- Read and understand the material safety data sheets (MSDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (*e.g.,* safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (*e.g.*, fume hood). For additional safety guidelines, consult the MSDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended on the MSDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

Chemical Waste Hazard Warning

⚠ WARNING **CHEMICAL WASTE HAZARD**. Wastes produced by Applied Biosystems instruments are potentially hazardous and can cause injury, illness, or death.

- Read and understand the material safety data sheets (MSDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Handle chemical wastes in a fume hood.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (*e.g.,* safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (*e.g.*, fume hood). For additional safety guidelines, consult the MSDS.

- ♦ After emptying the waste container, seal it with the cap provided.
- ♦ Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

About MSDSs

Some of the chemicals used with this instrument may be listed as hazardous by their manufacturer. When hazards exist, warnings are prominently displayed on the labels of all chemicals.

Chemical manufacturers supply a current MSDS before or with shipments of hazardous chemicals to new customers and with the first shipment of a hazardous chemical after an MSDS update. MSDSs provide you with the safety information you need to store, handle, transport, and dispose of the chemicals safely.

We strongly recommend that you replace the appropriate MSDS in your files each time you receive a new MSDS packaged with a hazardous chemical.

⚠ WARNING CHEMICAL HAZARD. Be sure to familiarize yourself with the MSDSs before using reagents or solvents.

Ordering MSDSs

You can order free additional copies of MSDSs for chemicals manufactured or distributed by Applied Biosystems using the contact information below.

To order documents by automated telephone service:

1	From the U.S. or Canada, dial **1.800.487.6809**, or from outside the U.S. and Canada, dial **1.858.712.0317**.
2	Follow the voice instructions to order documents (for delivery by fax). **Note** There is a limit of five documents per fax request.

To order documents by telephone:

In the U.S.	Dial **1.800.345.5224**, and press **1**.
In Canada	♦ To order in English, dial **1.800.668.6913** and press **1**, then **2**, then **1** ♦ To order in French, dial **1.800.668.6913** and press **2**, then **2**, then **1**
From any other country	See the specific region under “To Contact Technical Support by Telephone or Fax (Outside North America)” .

To view, download, or order documents through the Applied Biosystems web site:

Step	Action
1	Go to **http://www.appliedbiosystems.com**
2	Click **SERVICES & SUPPORT** at the top of the page, click **Documents on Demand**, then click **MSDS.**
3	Click **MSDS Index**, search through the list for the chemical of interest to you, then click on the MSDS document number for that chemical to open a pdf of the MSDS.

For chemicals not manufactured or distributed by Applied Biosystems, call the chemical manufacturer.

Instrument Safety Labels

Safety labels are located on the instrument. Each safety label has three parts:

- A signal word panel, which implies a particular level of observation or action (*e.g.,* CAUTION or WARNING). If a safety label encompasses multiple hazards, the signal word corresponding to the greatest hazard is used.
- A message panel, which explains the hazard and any user action required.
- A safety alert symbol, which indicates a potential personal safety hazard. See "Symbols and Instrument Labels" on page 1-2 for an explanation of all the safety alert symbols.

About Waste Disposal

As the generator of potentially hazardous waste, it is your responsibility to perform the actions listed below.

- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure the health and safety of all personnel in your laboratory.
- Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, or national regulations.

Note Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

Before Operating the Instrument

Ensure that everyone involved with the operation of the instrument has:

- Received instruction in general safety practices for laboratories
- Received instruction in specific safety practices for the instrument
- Read and understood all related MSDSs

⚠ CAUTION Avoid using this instrument in a manner not specified by Applied Biosystems. Although the instrument has been designed to protect the user, this protection can be impaired if the instrument is used improperly.

Sample Block Module Overview 2

Overview

About This Chapter This chapter provides an overview of the Auto-Lid Sample Block Module.

In This Chapter The following topics are covered in this chapter:

Topic	See Page
About the Auto-Lid Sample Block Module	2-2
Modules, Accessories, and Disposables	2-4

About the Auto-Lid Sample Block Module

Overview

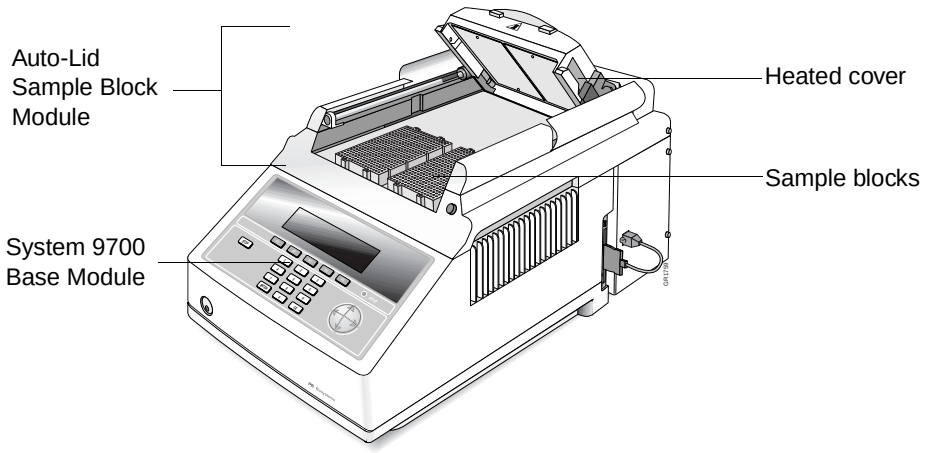
The GeneAmp® PCR System 9700 amplifies nucleic acids using the polymerase chain reaction (PCR) process.

The Auto-Lid Sample Block Module attaches to the top of the GeneAmp® PCR System 9700 Base Module and allows you to perform up to 768 reactions. The Auto-Lid Sample Block Module also adds automation to the system 9700, which can help increase throughput. See “Auto-Lid” on page 2-4 for more information.

You can remove the Auto-Lid Sample Block Module and replace it with another sample block module as needed. Interchangeability allows you to change sample well formats as well as throughput capacity.

IMPORTANT Interchanging sample block modules may require a firmware change. If the sample block module is placed on a base module running an earlier software version, the instrument will not operate correctly. To upgrade the base module software, use the PCMCIA (Personal Computer Memory Card International Association) interface card that is shipped with the Auto-Lid Sample Block Module. For instructions on upgrading the software, see the *GeneAmp PCR System 9700 Base Module User’s Manual* (P/N 0993-6247) or see “To Reach Technical Support Through the Applied Biosystems Web Site” on page A-6.

Diagram

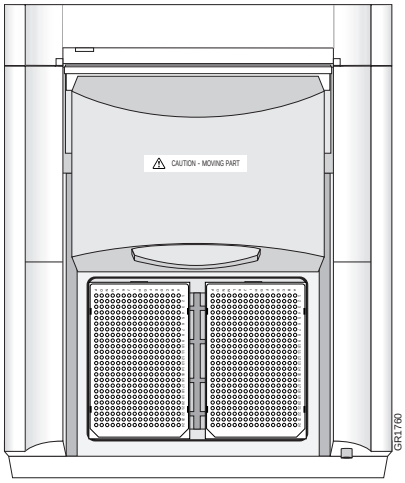


Sample Blocks

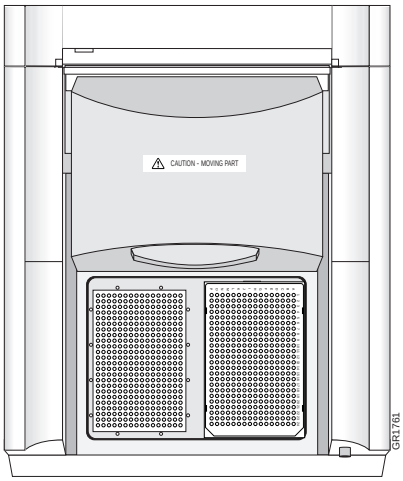
There are two sample blocks in the Auto-Lid Sample Block Module. Each holds one 384-well reaction plate.

IMPORTANT The right sample block is the primary control block, the left is a slave. If you are using only one reaction plate:

- Place the reaction plate you are using in the **right** sample block.
- Place an empty reaction plate in the left sample block.



Using reaction plates in both sides



Using one reaction plate in right side

Heated Cover

The heated cover slides over the sample blocks and performs two functions:

- It raises the temperature of the upper part of the tube (the part above the sample blocks) above the temperature of the reaction mixture. This eliminates condensation, which may have a negative effect on your chemistry.
- It puts pressure on the reaction plates to seat them firmly and precisely in the sample blocks. This is important for proper heat transfer.

Peltier Heating/ Cooling Unit

The internal Peltier heating/cooling unit is housed in the sample block module. The sample block module is made of aluminum to provide the optimal thermal transfer rate.

Platinum sensors in the sample block module provide:

- Wide temperature range: 4–99.9 °C
- Accuracy: ±0.25 °C from 35–100 °C
- Uniformity of each sample block: ±0.5 °C (measured after 30 sec at 95 °C)
- Uniformity of combined sample blocks: ±0.75 °C (measured after 30 sec at 95 °C)
- Long-term stability and high reliability

Auto-Lid

The auto-lid automatically closes the heated cover over the reaction plates at the start of a PCR run and then opens the heated cover when the run is completed.

If you have access to an automatic arm, the auto-lid can also be programmed to:

- Place the reaction plates on the sample block
- Remove the reaction plates from the sample block

If you do not have access to an automatic tick arm, the reaction plates can be placed and removed manually.

Modules, Accessories, and Disposables

Overview

The modules listed below are available for the GeneAmp PCR System 9700 Base Module. The accessories and disposables are for use with the Auto-Lid Sample Block Module.

Ordering

Order modules, accessories, and disposables from Applied Biosystems by part number. See the tables below.

Modules	Part Number
96-Well Sample Block Module	N805-0251
96-Well Gold Sample Block Module	4314443
96-Well Aluminum Sample Block Module	4314445
Dual 384-Well Sample Block Module	N805-0400
Auto-Lid Dual 384 Sample Block Module	4312904
0.5-mL 60-Well Sample Block Module	4309131

Accessories	Part Number
Tool, 384-Well Plate Extraction	T-6273
Dual 384-Well Sample Block Module Temperature Verification Kit **Note** This kit is also used for the Auto-Lid Sample Block Module.	4308354

Disposables	Part Number
MicroAmp® 384-Well Reaction Plates (Box of 50)	4305505
MicroAmp® Clear Adhesive Films (Pack of 100)	4306311

Using/Maintaining the Sample Block Module 3

Overview

About This Chapter This chapter describes how to use and maintain the Auto-Lid Sample Block Module.

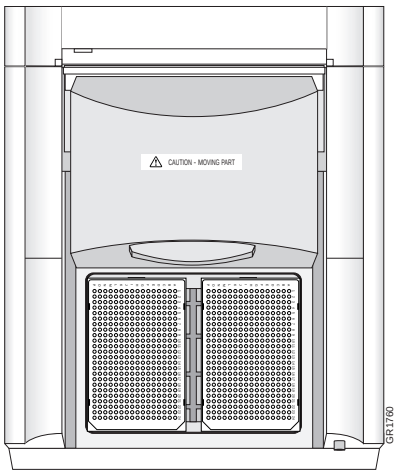
In This Chapter The following topics are covered in this chapter:

Topic	See Page
Installing the Auto-Lid Sample Block Module	3-2
Using Reaction Plates with the Sample Block Module	3-4
Cleaning the Sample Block Module	3-7
Fixing a Jam	3-9

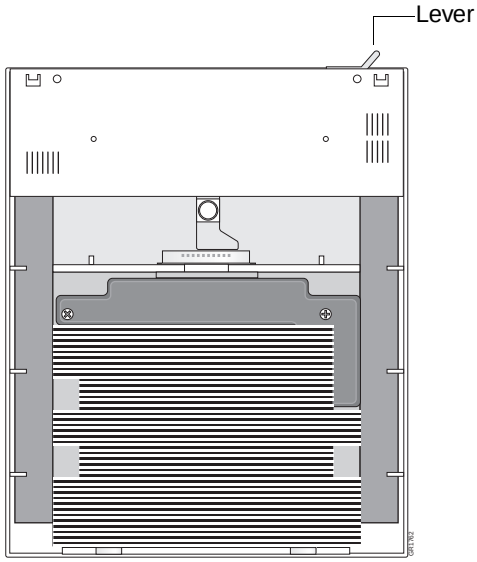
Installing the Auto-Lid Sample Block Module

Diagrams

A lever behind the sample block module releases it from the GeneAmp® PCR System 9700 Base Module. The top and bottom of the Auto-Lid Sample Block Module are shown below.



Top view, Auto-Lid Sample Block Module



Bottom view, Auto-Lid Sample Block Module

Installing the Sample Block Module

To install the sample block module into the GeneAmp PCR System 9700 Base Module:

Step	Action
1	Pull the lever out from the sample block module.
2	Place the sample block module onto the base module, then push the sample block module back to seat the electrical connections.
3	Push the lever into the base module to secure the sample block module.

Note If the sample block module is not seated correctly, the instrument cannot be turned on.

Installing the Communication Card and Cable

To install the communication card and cable into the GeneAmp PCR System 9700 Base Module:

Step	Action
1	Insert the communication card into the slot at the rear of the right side of the instrument (the label on the card face should be facing you).
2	Insert the connector end of the communication cable (very short cable) into the communication card.
3	Insert the other end of the cable (plug type) into the receptacle on the sample block module labeled **I/O Port**.

Installing the Power Line Cords and Powering Up

To install the power line cords into the sample block module and the GeneAmp PCR System 9700 Base Module:

Step	Action
1	Plug one end of the power line cord into the sample block module receptacle and the other end into an outlet.
2	Plug the very short jumper cable into the sample block module and the other into the base module.
3	Flip the power switch located on the sample block module near the plug receptacle and press the power button located on the front of the instrument.

Using Reaction Plates with the Sample Block Module

Overview

The following procedures describe how to:

- Load samples into the reaction plates
- Seal the reaction plates
- Place the reaction plates into the sample blocks (both manual and automatic procedures)
- Remove the reaction plates from the sample blocks (both manual and automatic procedures)
- Remove the adhesive films

Loading Samples into the Reaction Plates

To load samples into the reaction plates:

Step	Action
1	Pipette the samples into the reaction plate wells. **Note** The sample volume range is 5–20 µL.
2	Seal the reaction plates with adhesive films. See “Sealing the Reaction Plates” below. **Note** Do not use mineral oil or glycerine in the sample blocks or as a vapor barrier over the samples in the wells. The adhesive films prevent evaporation or contamination. In addition, the Auto-Lid Sample Block Module’s heated cover prevents condensation.

Sealing the Reaction Plates

Seal the reaction plates for the Auto-Lid Sample Block Module with MicroAmp® Clear Adhesive Films.

Note Do not use mineral oil or glycerine in the sample blocks or as a vapor barrier over the samples in the wells. The adhesive films prevent evaporation or contamination. In addition, the Auto-Lid Sample Block Module’s heated cover prevents condensation.

To seal the reaction plate:

Step	Action
1	Remove the paper backing from the adhesive film.
2	Place the adhesive side of the film onto the reaction plate.
3	Smooth down the adhesive film, working from the center of the reaction plate toward the edges.
4	After the reaction plates have been sealed, place them into the sample blocks.

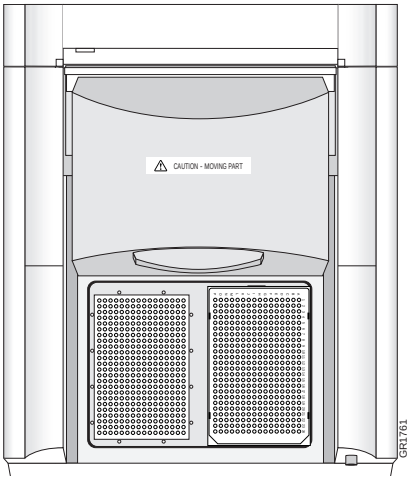
Placing the Reaction Plates

Placing the Reaction Plates Into the Sample Blocks

IMPORTANT The right sample block is the primary control block and the left is a slave. If you are using only one reaction plate:

- Place the reaction plate you are using in the right sample block.
- Place an empty reaction plate in the left sample block.

To manually place the reaction plates in the sample blocks:

Step	Action
1	Place a 384-well reaction plate into the **right** sample block. Make sure the well numbered A1 points toward the upper right corner of the sample block module, as shown below. This orients the reaction plate for proper fit. 
2	If you are using a second reaction plate, place it in the **left** sample block. Make sure the well numbered A1 points toward the upper right corner of the sample block module. This orients the reaction plate for proper fit.
3	Press the red button located near the right sample block to close the heated cover.
4	Process the samples as usual.

Removing the Reaction Plates

The 384-well plates can be removed by hand or with the assistance of the robotic arm.

The Plate Ejection system is a unique feature that allows for easy access by a robot arm to remove each 384-well plate from the sample block, following cycling and opening of the lid.

Removing the Adhesive Film

To remove adhesive film:

Step	Action
1	Hold one corner of the adhesive film and pull it back across the reaction plate. **IMPORTANT** Hold the reaction plate firmly down while pulling back the adhesive film. This will help keep sample at the bottom of the wells. If the reaction plate is tilted or jostled, the sample may have to be centrifuged.

Cleaning the Sample Block Module

Overview

The following procedures describe how to:

- Put the heated cover into the cleaning position
- Clean the heated cover
- Clean the sample block wells

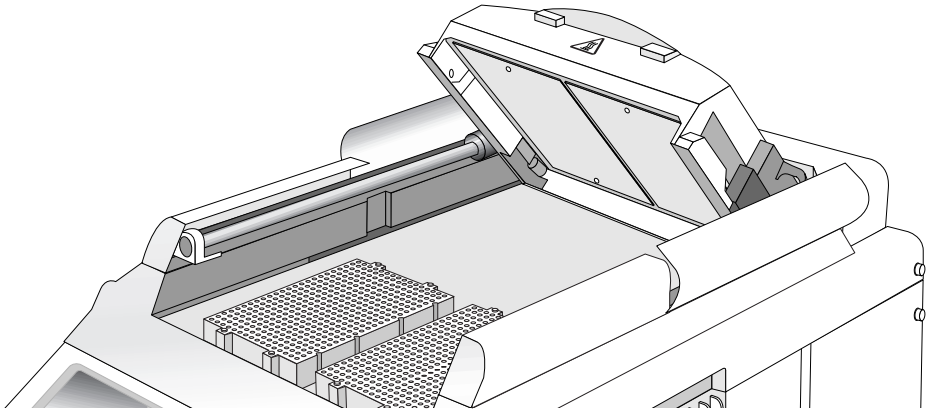
IMPORTANT Before using any cleaning or decontamination method, except those recommended in this manual, check with Applied Biosystems to ensure that the proposed method will not damage the equipment.

Cleaning Position

To clean the Auto-Lid Sample Block Module, you must first put the heated cover into the cleaning position. Follow the steps below.

To put the heated cover into the cleaning position:

Step	Action
1	Make sure the heated cover is in the rear position. If it is not, press and release the red button to automatically move the heated cover to the rear position.
2	The heated cover is now in the correct position.
3	Lift the front of the heated cover. The cleaning position is shown below.



Cleaning the Heated Cover

Clean the heated cover once a month, or more frequently if needed.

⚠ WARNING During instrument operation, the temperature of the heated cover can be as high as 108 °C, and the temperature of the sample block module can be as high as 100 °C. Before performing this procedure, wait until the heated cover and sample block module reach room temperature.

To clean the heated cover:

Step	Action
1	Put the heated cover into the cleaning position. See “Cleaning Position” on page 3-7.
2	Turn off the instrument.
3	Wait 20–30 minutes for the heated cover to cool down.
4	Soak a cotton swab or clean cloth with pure isopropanol and gently wipe the bottom of the heated cover. **⚠ WARNING** **CHEMICAL HAZARD**. **Isopropanol** is a flammable liquid and vapor. It may cause eye, skin, and upper respiratory tract irritation. Prolonged or repeated contact may dry skin and cause irritation. It may cause central nervous system effects such as drowsiness, dizziness, and headache, etc. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.
5	Remove any remaining isopropanol from the heated cover with a clean cloth and return the cover to its normal position.
6	If the heated cover becomes contaminated with amplified DNA: a. Wipe the heated cover with a clean cloth or cotton swab soaked in 10% bleach. b. Wipe with a clean, damp cloth. **⚠ WARNING** **CHEMICAL HAZARD**. **Sodium hypochlorite (bleach)** is a liquid disinfectant that can be corrosive to the skin and can cause skin depigmentation. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Cleaning the Sample Block Wells

Clean the sample block wells once a month, or more frequently if needed.

To clean the sample block wells:

Step	Action
1	Let the system 9700 cool to the idle setpoint (25°C).
2	Put the heated cover into the cleaning position. See “Cleaning Position” on page 3-7.
3	Turn off the instrument.
4	Remove the reaction plates from the sample block module and set them aside.
5	Soak a cotton swab in pure isopropanol and clean the sample block wells thoroughly. **⚠ WARNING** **CHEMICAL HAZARD**. **Isopropanol** is a flammable liquid and vapor. It may cause eye, skin, and upper respiratory tract irritation. Prolonged or repeated contact may dry skin and cause irritation. It may cause central nervous system effects such as drowsiness, dizziness, and headache, etc. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

To clean the sample block wells: *(continued)*

Step	Action
6	Remove any remaining isopropanol from the heated cover before reloading the reaction plates.
7	If the sample block wells become contaminated with amplified DNA: a. Clean the wells thoroughly with a cotton swab soaked in 10% bleach. b. Wipe with a clean, damp cloth. **⚠ WARNING CHEMICAL HAZARD**. **Sodium hypochlorite (bleach)** is a liquid disinfectant that can be corrosive to the skin and can cause skin depigmentation. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Fixing a Jam

About Jams

The following table describes how to fix a jam that is causing the auto-lid to stop:

If the auto-lid jams...	Then...
while closing,	the auto-lid will automatically retract to the open position. ♦ Find the jam and clear it. ♦ Press the red button and hold for 1 sec. The heated cover returns to the open position and the instrument is reset.
while opening,	the auto-lid will stop moving and remain in place. ♦ Try to find the jam and clear it. ♦ Press the red button and hold for 1 sec. The heated cover returns to the open position and the instrument is reset.

Testing the Sample Block Module 4

Overview

About This Chapter

This chapter describes how to perform tests that verify that your Auto-Lid Sample Block Module is functioning properly.

In This Chapter

The following topics are covered in this chapter:

Topic	See Page
Running the Calibration Verification Test	4-2
Running the Temperature Non-Uniformity Test	4-8
Running System Performance Diagnostics	4-15
Data Sheet: Calibration Verification Test	4-19
Data Sheet: Temperature Non-Uniformity Test	4-20

Running the Calibration Verification Test

Overview

Use this test to verify the temperature calibration of your GeneAmp® PCR System 9700 Auto-Lid Sample Block Module.

The Calibration Verification Test consists of several subprocedures, which must be done in order:

Subprocedure	See Page
Setting Up the 20-µL Probe Assembly	4-3
Configuring the System 9700	4-4
Running the Test	4-5
Evaluating the Results	4-7

⚠ WARNING **PHYSICAL INJURY HAZARD**. Hot Surface. Use care when working around the heated cover and sample block to avoid being burned by hot components.

Equipment Required

This test requires the Dual 384-Well Sample Block Module Temperature Verification Kit (P/N 4308354).

Note This kit is also used for the Auto-Lid Sample Block Module.

Your kit includes:

- Light mineral oil
- Two 384-Well Temperature Verification Plates
- 20-µL Probe Assembly
- Digital thermometer with 9V battery installed

Setting Up the 20-µL Probe Assembly

To set up the 20-µL Probe Assembly:

Step	Action
1	Make sure the heated cover is in the rear position. If it is not, press and release the red button to automatically move the heated cover to the rear position.
2	Place both 384-Well Temperature Verification Plates on the sample blocks. The plate labeled L1–L6 is for the **left** sample block. The plate labeled R1–R6 is for the **right** sample block. Position the plates so the angled corners face away from you. **Note** The plates are used as a guide to help you locate the probes within the sample blocks.
3	Use the stick end of a cotton swab to coat well R3 with mineral oil. **Note** The wells are too small for the swab end.
4	Place the 20-µL Probe Assembly into well R3.
5	Thread the probe wire through the channels in the 384-Well Temperature Verification Plate to prevent damage to the probe and lead wires.
6	Make sure the probe is connected to the digital thermometer.
7	Press and release the red button to automatically close the heated cover. **IMPORTANT** Seat the probe properly. If the probe wire is crushed when the heated cover closes, the probe may be damaged.
8	Turn on the digital thermometer. **Note** Refer to the instructions included with your Temperature Verification Kit for a detailed description on operating the digital thermometer.

Configuring the System 9700

To configure the system 9700 for the Calibration Verification Test:

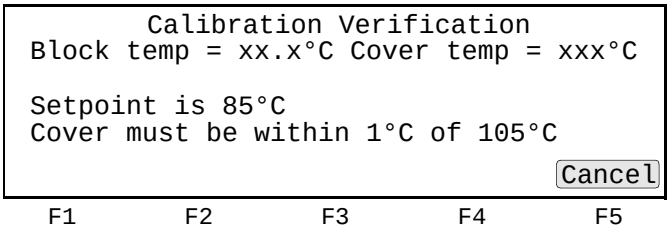
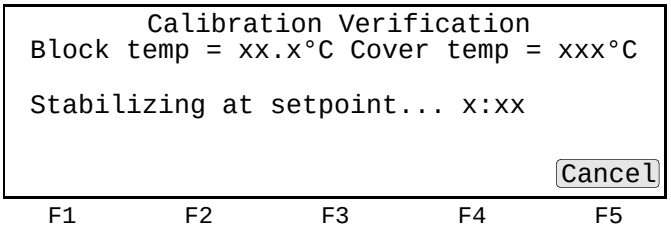
Step	Action
1	Turn on the system 9700. The main menu appears.
2	Press **F4** (Util). The **Utilities** screen appears.
3	Press **F1** (Diag). The **Diagnostics** screen appears.
4	Press **F3** (TmpVer). The **Temperature Verification** screen appears. Temperature Verification Temp - Calibration Verification TNU - Temperature Non-Uniformity [Temp] [TNU] [Exit] F1 F2 F3 F4 F5
5	Press **F1** (Temp) to automatically configure the system 9700 for the Calibration Verification Test. The **Calibration Verification** screen appears. Calibration Verification Block temp = xx.x°C Cover temp = xxx°C Place probe in well R3 Press Run [Run] [Cancel] F1 F2 F3 F4 F5

Running the Test

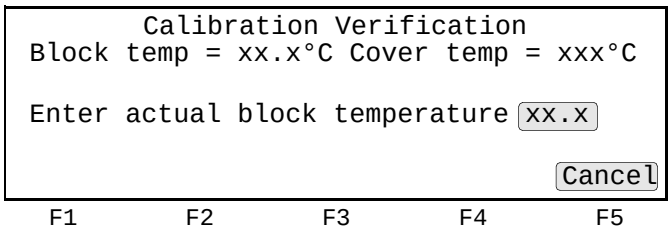
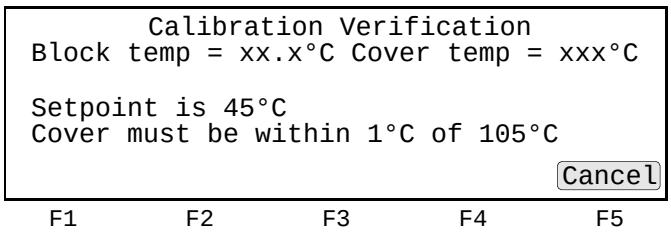
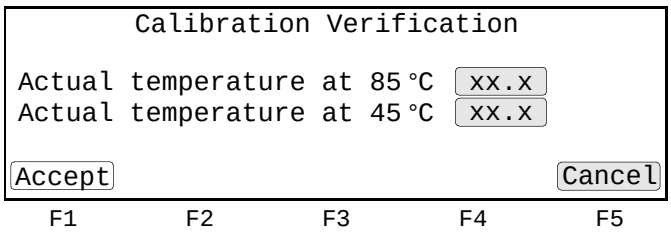
Use the digital thermometer to take temperature readings of the sample well connected to the 20-µL Probe Assembly. You will take a reading at two different setpoint temperatures.

Note If necessary, press F5 (Cancel) to exit the test.

To run the Calibration Verification Test:

Step	Action
1	Press **F1** (Run). This starts the Calibration Verification Test. The **Calibration Verification** screen appears with a setpoint value displayed.  **Note** The cover must be within 1 °C of 105 °C. It may take several minutes for the system 9700 to ramp up.
2	During calibration: a. The **Calibration Verification** screen counts down the time until the setpoint is reached.  b. When the **Stabilizing at setpoint** value decrements to 0, read the digital thermometer. **Note** Refer to the instructions included with your Temperature Verification Kit for a detailed description on operating the digital thermometer.

To run the Calibration Verification Test: *(continued)*

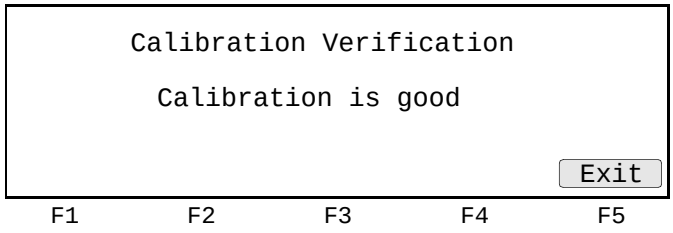
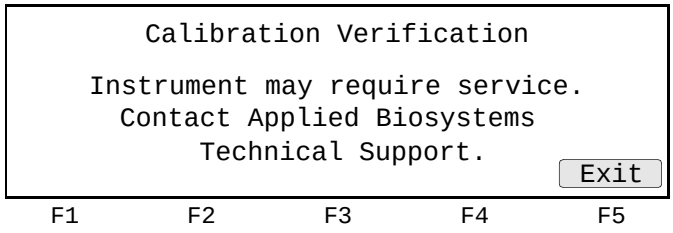
Step	Action
3	Using the numeric keys, type the value displayed on the digital thermometer in the **Enter actual block temperature** field.  **Note** The digital thermometer displays a four-digit value; round this off to three digits before typing it in the **Calibration Verification** screen. **Note** To keep a permanent record of the test, record this value on the Calibration Verification Test Data Sheet (page 4-19).
4	Press **Enter**. The system 9700 automatically begins the second reading (45 °C setpoint). The Calibration Verification screen appears with the setpoint value displayed.  **Note** The cover must be within 1 °C of 105 °C.
5	Repeat step 2 and step 3 for the second reading.
6	The system 9700 evaluates the calibration of the sample block temperature for the setpoint values you entered and displays the results. A summary screen appears at the conclusion of the test.  If you entered values on the Calibration Verification Test Data Sheet, compare those values with the actual test results.
7	Press **F1** (Accept). To interpret the results, see “Evaluating the Results” on page 4-7.

To run the Calibration Verification Test: *(continued)*

Step	Action
8	When you have completed all measurements, be sure to: ♦ Press **F5** (Exit). ♦ Remove the 20-µL Probe Assembly from the sample blocks. ♦ Turn off the digital thermometer and clean off the oil. ♦ Remove the 384-Well Temperature Verification Plates from the sample blocks. **IMPORTANT** Make sure the sample blocks are at room temperature (~25 °C) before removing the reaction plates.

Evaluating the Results

When the system 9700 completes the Calibration Verification Test, one of two screens appears. See the table below to evaluate the results.

If the sample block module...	Then the...
is properly calibrated,	Calibration Verification screen appears with the following message displayed: 
does not pass the Calibration Verification Test,	Calibration Verification screen appears with the following message displayed:  ♦ If the test fails, repeat the procedure to make sure the meter was not misread and that errors were not made entering data. ♦ If the test fails again, contact Applied Biosystems Technical Support. See “Technical Support” on page A-2.

Running the Temperature Non-Uniformity Test

Overview

Use this test to verify the temperature uniformity of the GeneAmp PCR System 9700 Auto-Lid Sample Block Module.

The Temperature Non-Uniformity Test consists of several subprocedures, which must be done in order:

Subprocedure	See Page
Setting Up the 20-µL Probe Assembly	4-9
Configuring the System 9700	4-10
Running the Test	4-11
Evaluating the Results	4-14

⚠ WARNING **PHYSICAL INJURY HAZARD**. Hot Surface. Use care when working around the heated cover and sample block to avoid being burned by hot components.

Equipment Required

This test requires the Dual 384-Well Sample Block Module Temperature Verification Kit (P/N 4308354).

Note This kit is also used for the Auto-Lid Sample Block Module.

Your kit includes:

- Light mineral oil
- Two 384-Well Temperature Verification Plates
- 20-µL Probe Assembly
- Digital thermometer with 9V battery installed

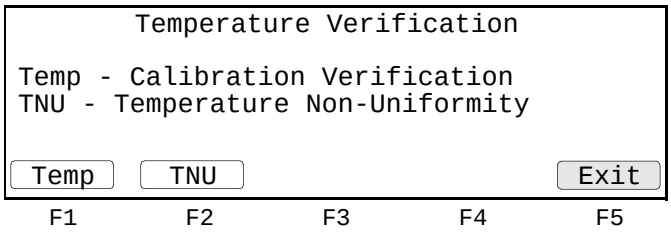
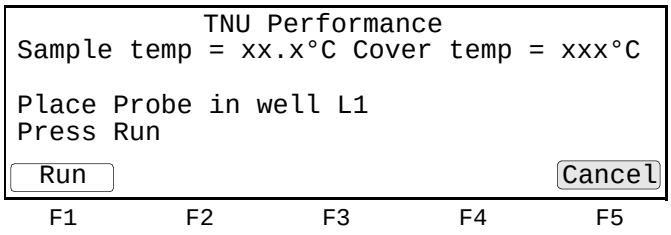
Setting Up the 20-µL Probe Assembly

To set up the 20-µL Probe Assembly:

Step	Action
1	Make sure the heated cover is in the rear position. If it is not, press and release the red button to automatically move the heated cover to the rear position.
2	Place both 384-Well Temperature Verification Plates on the sample blocks. The plate labeled L1–L6 is for the **left** sample block. The plate labeled R1–R6 is for the **right** sample block. Position the plates so the angled corners face away from you. **Note** The plates are used as a guide to help you locate the probes within the sample blocks.
3	Use the stick end of a cotton swab to coat wells L1–L6 and R1–R6 with mineral oil. **Note** The wells are too small for the swab end.
4	Place the 20-µL Probe Assembly into well L1. **Note** As the test progresses, you will move the 20-µL Probe Assembly to each of the test wells (L1–L6 and R1–R6).
5	Thread the probe wire through the channels in the 384-Well Temperature Verification Plate to prevent damage to the probe and lead wires.
6	Make sure the probe is connected to the digital thermometer.
7	Press and release the red button to automatically close the heated cover. **IMPORTANT** Seat the probe properly. If the probe wire is crushed when the heated cover closes, the probe may be damaged.
8	Turn on the digital thermometer. **Note** Refer to the instructions included with your Temperature Verification Kit for a detailed description on operating the digital thermometer.

Configuring the System 9700

To configure the system 9700 for the Temperature Non-Uniformity Test:

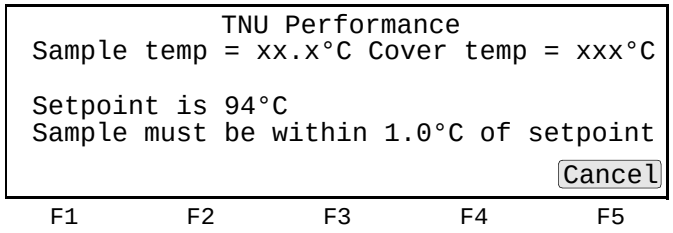
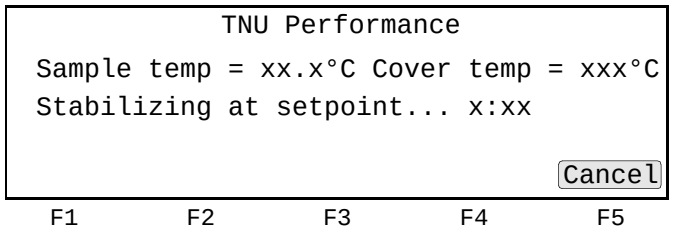
Step	Action
1	Turn on the system 9700. The main menu appears.
2	Press **F4** (Util). The **Utilities** screen appears.
3	Press **F1** (Diag). The **Diagnostics** screen appears.
4	Press **F3** (TmpVer). The **Temperature Verification** screen appears. 
5	Press **F2** (TNU) to automatically configure the system 9700 for the Temperature Non-Uniformity Test. The **TNU Performance** screen appears. 

Running the Test

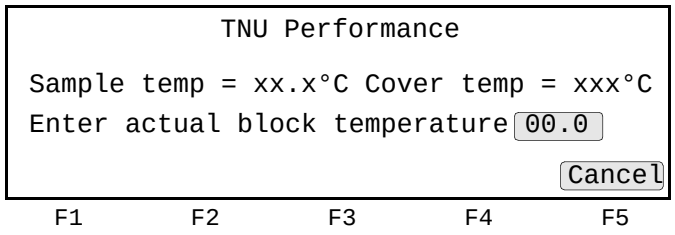
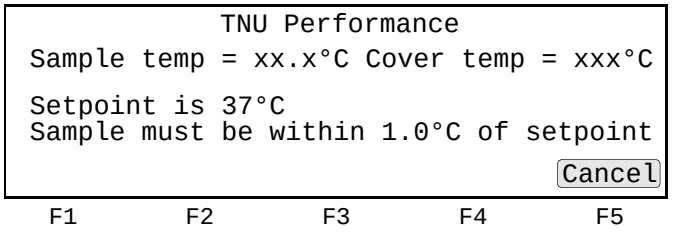
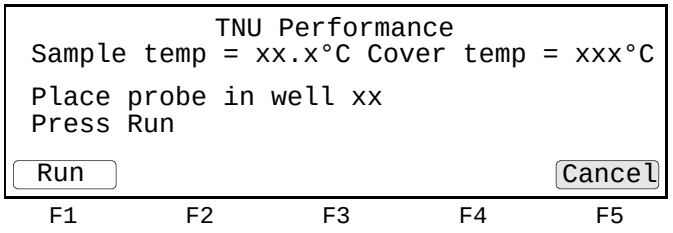
The Temperature Non-Uniformity Test uses the 20-µL Probe Assembly to test the temperature uniformity of six different wells in each sample block.

Note If necessary, press F5 (Cancel) to exit the test.

To run the Temperature Non-Uniformity Test:

Step	Action
1	Press **F1** (Run). This starts the Temperature Non-Uniformity Test. The **TNU Performance** screen appears with the setpoint value displayed.  **Note** The sample blocks must be within 1.0 °C of the setpoint. In addition, the cover must be within 1 °C of 105 °C. It may take several minutes for the system 9700 to ramp up.
2	Take a temperature reading. a. The **TNU Performance** screen counts down the time until the setpoint is stabilized.  b. When the **Stabilizing at setpoint** value decrements to zero, read the digital thermometer. **Note** Refer to the instructions included with your Temperature Verification Kit for a detailed description on operating the digital thermometer.

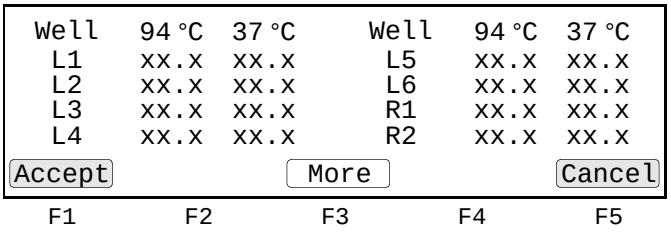
To run the Temperature Non-Uniformity Test: *(continued)*

Step	Action
3	Using the numeric keys, type the value displayed on the digital thermometer in the **Enter actual block temperature** field.  **Note** The digital thermometer displays a four-digit value; round this off to three digits before typing it in the TNU Performance screen. **Note** To keep a permanent record of the test, record this value on the Temperature Non-Uniformity Test Data Sheet (page 4-20).
4	Press **Enter**. The system 9700 automatically begins the second reading (37 °C setpoint). The **TNU Performance** screen appears with the setpoint value displayed.  **Note** The sample blocks must be within 1.0 °C of the setpoint.
5	Repeat step 2 and step 3 for the second reading.
6	Press **Enter**. The **TNU Performance** screen appears with the following prompt: 

To run the Temperature Non-Uniformity Test: *(continued)*

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>7</td><td>Press and release the red button to automatically open the heated cover. Repeat step 4 through step 7 of “Setting Up the 20-µL Probe Assembly” on page 4-9 and step 1 through step 6 of this procedure. Complete these steps for all 12 wells to be tested:

<table>
<tr><th>Left Sample Block</th><th>Right Sample Block</th></tr>
<tr><td>L1</td><td>R1</td></tr>
<tr><td>L2</td><td>R2</td></tr>
<tr><td>L3</td><td>R3</td></tr>
<tr><td>L4</td><td>R4</td></tr>
<tr><td>L5</td><td>R5</td></tr>
<tr><td>L6</td><td>R6</td></tr>
</table></td></tr>
<tr><td>8</td><td>The system 9700 evaluates the uniformity of the sample block temperature for the setpoint values you entered and displays the results. A summary screen appears at the conclusion of the test.


Well 94 °C 37 °C Well 94 °C 37 °C
L1 xx.x xx.x L5 xx.x xx.x
L2 xx.x xx.x L6 xx.x xx.x
L3 xx.x xx.x R1 xx.x xx.x
L4 xx.x xx.x R2 xx.x xx.x
Accept More Cancel
F1 F2 F3 F4 F5

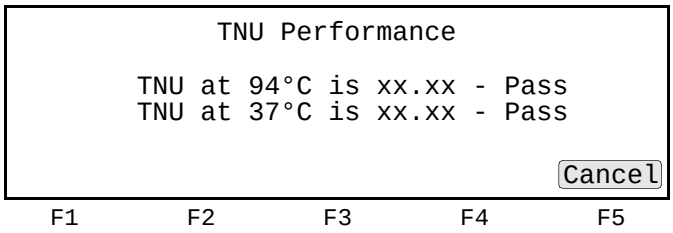
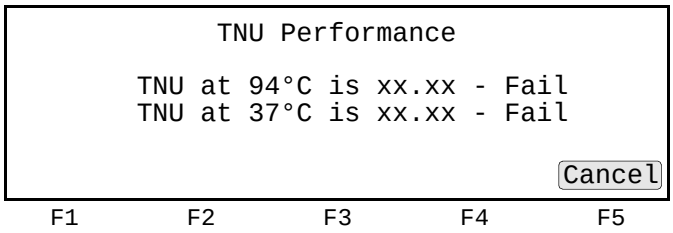
If you entered values on the Temperature Non-Uniformity Test Data Sheet, compare those values with the actual test results.</td></tr>
<tr><td>9</td><td>Press F1 (Accept). To interpret the results, see “Evaluating the Results” on page 4-14.</td></tr>
<tr><td>10</td><td>When you have completed all measurements, be sure to:

♦ Press F5 (Cancel).
♦ Remove the 20-µL Probe Assembly from the sample blocks.
♦ Turn off the digital thermometer and clean off the oil.
♦ Remove the 384-Well Temperature Verification Plates from the sample blocks.

IMPORTANT Make sure the sample blocks are at room temperature (~25 °C) before removing the reaction plates.</td></tr>
</table>

Evaluating the Results

When the system 9700 completes the Temperature Non-Uniformity Test, the TNU Performance screen appears. See the table below to evaluate the results.

If the...	Then...
Temperature of the sample block wells is uniform,	**Pass** appears after each setpoint temperature. 
Temperature variation of the sample block wells exceeds performance specifications,	**Fail** appears after the setpoint temperature(s) for which the test failed.  ♦ If the test fails, repeat the procedure to make sure the meter was not misread and that errors were not made entering data. ♦ If the test fails again, contact Applied Biosystems Technical Support. See “Technical Support” on page A-2.

Running System Performance Diagnostics

Overview

After you have configured the GeneAmp PCR System 9700, conduct the System Performance Diagnostics to verify the integrity of the cooling and heating system.

There are two System Performance Diagnostics:

- Rate Test
- Cycle Test

Equipment Required

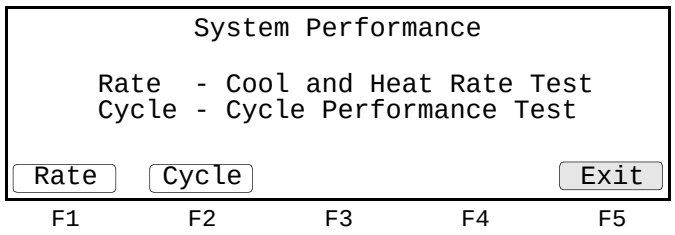
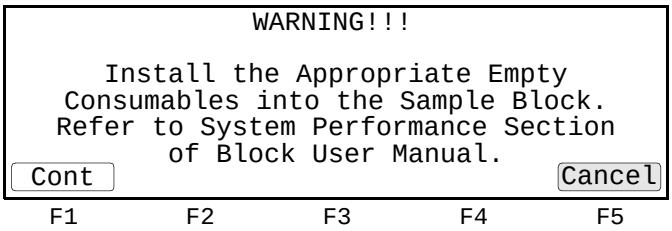
These diagnostics require:

- Two MicroAmp® 384-Well Reaction Plates

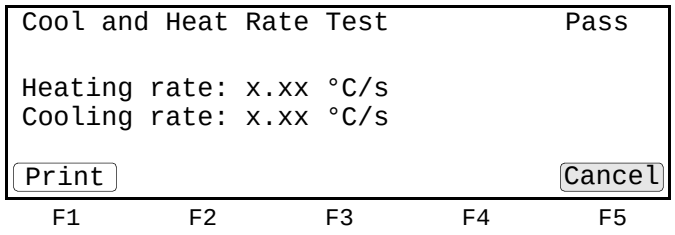
Running the Rate Test

Use the Rate Test to verify that the Peltier units are operating correctly. The test takes approximately 10 minutes to run.

To run the Rate Test:

Step	Action
1	Turn on the system 9700. The main menu appears.
2	Press **F4** (Util). The **Utilities** screen appears.
3	Press **F1** (Diag). The **Diagnostics** screen appears.
4	Press **F2** (System). The **System Performance** screen appears. 
5	Press **F1** (Rate) from the **System Performance** screen. A Warning message appears.  **Note** You will install the MicroAmp 384-Well Reaction Plates.
6	**Note** Make sure the reaction plates are sealed with the adhesive film. Place empty MicroAmp 384-Well Reaction Plates in the sample blocks. Press and release the red button to automatically close the heated cover.
7	After you have installed the reaction plates, press **F1** (Cont). The instrument runs through a series of tests in which the sample blocks are stabilized at 35 °C, 94 °C, and 4 °C.

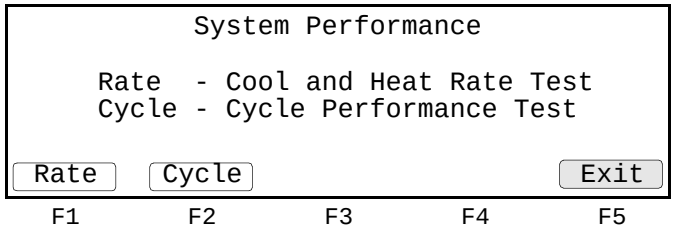
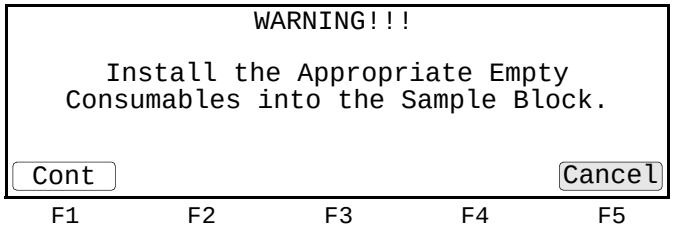
To run the Rate Test: *(continued)*

Step	Action
8	View the test results. At the conclusion of the test, the **Cool and Heat Rate Test** screen appears. The screen displays the test results and indicates whether the test passed or failed. 
9	Check your Rate Test results against the passing ranges listed below. Heating Rate: > 1.0 °C /second Cooling Rate: > –1.4 °C /second
10	If the test fails, repeat the procedure once. If the test fails again, contact Applied Biosystems Technical Support. See “Technical Support” on page A-2.

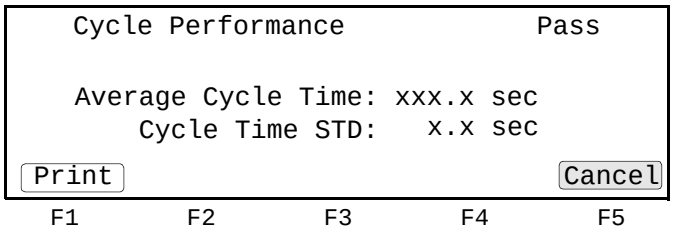
Running the Cycle Test

Use the Cycle Test to verify that the PCR cycling function operates properly. This test takes approximately 15 minutes to run.

To run the Cycle Test:

Step	Action
1	Turn on the system 9700. The main menu appears.
2	Press **F4** (Util). The **Utilities** screen appears.
3	Press **F1** (Diag). The **Diagnostics** screen appears.
4	Press **F2** (System). The **System Performance** screen appears. 
5	Press **F2** (Cycle) from the **System Performance** screen. A Warning message appears.  **Note** You will install the MicroAmp 384-Well Reaction Plates.
6	Place empty MicroAmp 384-Well Reaction Plates in the sample blocks. Press and release the red button to automatically close the heated cover.
7	After you have installed the reaction plates, press **F1** (Cont). The Cycle Test executes a two-temperature PCR cycling protocol, then measures and reports the average cycle time and the cycle-to-cycle variation.
IMPORTANT Pressing Pause during the Cycle Test may generate false test results. Rerun the Cycle Test if **Pause** was pressed during the test.	

To run the Cycle Test: *(continued)*

Step	Action
8	View the test results. At the conclusion of the test, the **Cycle Performance** screen appears. The screen displays the test results and whether the test passed or failed.  Check your Cycle Test results against the passing ranges listed below. Average Cycle Time: ≤ 140 seconds Cycle Time STD: < 5 seconds
9	If the test fails, repeat the procedure once. If the test fails again, contact Applied Biosystems Technical Support. See “Technical Support” on page A-2.

Data Sheet: Calibration Verification Test

Instructions When running the Calibration Verification Test, record the setpoint values for **well R3** on this data sheet. At the end of the Calibration Verification Test, check the values displayed on the system 9700 against the values recorded here. This will help you maintain accurate test records.

Note If desired, you may photocopy this page.

Date	Tested By	Probe Serial No.	Thermometer Serial No.	Setpoint Value: Well R3	
				85 °C	45 °C

Data Sheet: Temperature Non-Uniformity Test

Instructions When running the Temperature Non-Uniformity Test, record the setpoint values for **wells L1–L6 and R1–R6** on this data sheet. At the end of the Temperature Non-Uniformity Test, check the values displayed on the system 9700 against the values recorded here. This will help you maintain accurate test records.

Note If desired, you may photocopy this page.

Date		
Tested By		
Probe Serial No.		
Thermometer Serial No.		
Setpoint Value	**94 °C**	**37 °C**
L1		
L2		
L3		
L4		
L5		
L6		
R1		
R2		
R3		
R4		
R5		
R6		

Getting Help

A

Overview

About this Appendix This appendix describes how to get technical help from Applied Biosystems.

Technical Support

Contacting Technical Support

You can contact Applied Biosystems for technical support:

- By e-mail
- By telephone or fax
- Through the Applied Biosystems web site

You can order Applied Biosystems user documents, MSDSs, certificates of analysis, and other related documents 24 hours a day. In addition, you can download documents in PDF format from the Applied Biosystems web site. (Please see the section “To Obtain Technical Documents” following the telephone information below)

To Contact Technical Support by E-Mail

You can contact Applied Biosystems Technical Support by e-mail for help in the following product areas:

Product/Product Area	E-mail address
Genetic Analysis (DNA Sequencing)	galab@appliedbiosystems.com
Sequence Detection Systems (Real-Time PCR) and PCR	pcrlab@appliedbiosystems.com
Protein Sequencing, Peptide, and DNA Synthesis	corelab@appliedbiosystems.com
♦ Biochromatography (BioCAD®, SPRINT™, VISION™, and INTEGRAL® Workstations and POROS® Perfusion Chromatography Products) ♦ Expedite™ 8900 Nucleic Acid Synthesis Systems ♦ MassGenotyping Solution 1™ (MGS1) Systems ♦ PNA Custom and Synthesis ♦ Pioneer™ Peptide Synthesizers ♦ Proteomics Solution 1™ (PS1) Systems ♦ ICAT™ Reagent ♦ FMAT™ 8100 HTS Systems ♦ Mariner™ ESI-TOF Mass Spectrometry Workstations ♦ Voyager™ MALDI-TOF Biospectrometry Workstations ♦ CytoFluor® 4000 Fluorescence Plate Reader	tsupport@appliedbiosystems.com
LC/MS (Applied Biosystems/MDS Sciex)	support@sciex.com
Chemiluminescence (Tropix)	tropix@appliedbiosystems.com

To Contact Technical Support by Telephone or Fax (North America)

To contact Applied Biosystems Technical Support in North America, use the telephone or fax numbers in the table below.

Note To schedule a service call for other support needs, or in case of an emergency, dial **1.800.831.6844**, then press **1**.

Product/Product Area	Telephone	Fax
ABI PRISM® 3700 DNA Analyzer	**1.800.831.6844**, then press **8**[a]	**1.650.638.5981**
DNA Synthesis	**1.800.831.6844**, press **2**, then press **1**[a]	**1.650.638.5981**
Fluorescent DNA Sequencing	**1.800.831.6844**, press **2**, then press **2**[a]	**1.650.638.5981**
Fluorescent Fragment Analysis (including GeneScan® applications)	**1.800.831.6844**, press **2**, then press **3**[a]	**1.650.638.5981**
Integrated Thermal Cyclers (ABI PRISM® 877 and Catalyst 800 instruments)	**1.800.831.6844**, press **2**, then press **4**[a]	**1.650.638.5981**
ABI PRISM® 3100 Genetic Analyzer	**1.800.831.6844**, press **2**, then press **6**[a]	**1.650.638.5981**
Peptide Synthesis (433 and 43x Systems)	**1.800.831.6844**, press **3**, then press **1**[a]	**1.650.638.5981**
Protein Sequencing (Procise® Protein Sequencing Systems)	**1.800.831.6844**, press **3**, then press **2**[a]	**1.650.638.5981**
Sequence Detection Systems (Real-Time PCR) and PCR	**1.800.762.4001**, then press: **1** for PCR[a] **2** for TaqMan® applications and Sequence Detection Systems including ABI Prism, 7700, 7900, and 5700[a] **6** for the 6700 Automated Sample Prep System[a] or **1.800.831.6844**, then press **5**[a]	**1.240.453.4613**
♦ Mariner™ ESI-TOF Mass Spectrometry Workstations ♦ Voyager™ MALDI-TOF Biospectrometry Workstations ♦ MassGenotyping Solution 1™ (MGS1) Systems ♦ Proteomics Solution 1™ (PS1) Systems ♦ ICAT™ Reagent	**1.800.899.5858**, press **1**, then press **3**[b]	**1.508.383.7855**

Product/Product Area	Telephone	Fax
Biochromatography (BioCAD®, SPRINT™, VISION™, and INTEGRAL® Workstations and POROS® Perfusion Chromatography Products)	**1.800.899.5858**, press **1**, then press **4**[b]	**1.508.383.7855**
Expedite™ 8900 Nucleic Acid Synthesis Systems	**1.800.899.5858**, press **1**, then press **5**[b]	**1.508.383.7855**
Pioneer™ Peptide Synthesizers	**1.800.899.5858**, press **1**, then press **5**[b]	**1.508.383.7855**
PNA Custom and Synthesis	**1.800.899.5858**, press **1**, then press **5**[b]	**1.508.383.7855**
♦ FMAT™ 8100 HTS Systems ♦ CytoFluor® 4000 Fluorescence Plate Reader	**1.800.899.5858**, press **1**, then press **6**[b]	**1.508.383.7855**
Chemiluminescence (Tropix)	**1.800.542.2369** (U.S. only), or **1.781.271.0045**[c]	**1.781.275.8581**
LC/MS (Applied Biosystems/MDS Sciex)	**1.800.952.4716**	**1.508.383.7899**

a. 5:30 AM to 5:00 PM Pacific time.

b. 8:00 AM to 6:00 PM Eastern time.

c. 9:00 AM to 5:00 PM Eastern time.

To Contact Technical Support by Telephone or Fax (Outside North America)

To contact Applied Biosystems Technical Support or Field Service outside North America, use the telephone or fax numbers below.

Region	Telephone	Fax
Eastern Asia, China, Oceania		
Australia (Scoresby, Victoria)	**61 3 9730 8600**	**61 3 9730 8799**
China (Beijing)	**86 10 64106608** or **86 800 8100497**	**86 10 64106617**
Hong Kong	**852 2756 6928**	**852 2756 6968**
India (New Delhi)	**91 11 653 3743/3744**	**91 11 653 3138**
Korea (Seoul)	**82 2 593 6470/6471**	**82 2 593 6472**
Malaysia (Petaling Jaya)	**60 3 79588268**	**60 3 79549043**
Singapore	**65 896 2168**	**65 896 2147**
Taiwan (Taipei Hsien)	**886 2 2358 2838**	**886 2 2358 2839**
Thailand (Bangkok)	**66 2 719 6405**	**66 2 319 9788**
Europe		
Austria (Wien)	**43 (0)1 867 35 75 0**	**43 (0)1 867 35 75 11**
Belgium	**32 (0)2 532 4484**	**32 (0)2 582 1886**
Denmark (Naerum)	**45 45 58 60 00**	**45 45 58 60 01**
Finland (Espoo)	**358 (0)9 251 24 250**	**358 (0)9 251 24 243**
France (Paris)	**33 (0)1 69 59 85 85**	**33 (0)1 69 59 85 00**
Germany (Weiterstadt)	**49 (0)6150 101 0**	**49 (0)6150 101 101**
Italy (Milano)	**39 (0)39 83891**	**39 (0)39 838 9492**

Region	Telephone	Fax
Norway (Oslo)	**47 23 12 06 05**	**47 23 12 05 75**
Portugal (Lisboa)	**351.(0)22.605.33.14**	**351.(0)22.605.33.15**
Spain (Tres Cantos)	**34.(0)91.806.1210**	**34.(0)91.806.12.06**
Sweden (Stockholm)	**46 (0)8 619 4400**	**46 (0)8 619 4401**
Switzerland (Rotkreuz)	**41 (0)41 799 7777**	**41 (0)41 790 0676**
The Netherlands (Nieuwerkerk a/d IJssel)	**31 (0)180 392400**	**31 (0)180 392409** or **31 (0)180 392499**
United Kingdom (Warrington, Cheshire)	**44 (0)1925 825650**	**44 (0)1925 282502**
European Managed Territories (EMT)		
Africa, English speaking (Johannesburg, South Africa)	**27 11 478 0411**	**27 11 478 0349**
Africa, French speaking (Paris, France)	**33 1 69 59 85 11**	**33 1 69 59 85 00**
India (New Delhi)	**91 11 653 3743** **91 11 653 3744**	**91 11 653 3138**
Poland, Lithuania, Latvia, and Estonia (Warszawa)	**48 22 866 40 10**	**48 22 866 40 20**
For all other EMT countries not listed (Central and southeast Europe, CIS, Middle East, and West Asia)	**44 1925 282481**	**44 1925 282509**
Japan		
Japan (Hacchobori, Chuo-Ku, Tokyo)	**81 3 5566 6230**	**81 3 5566 6507**
Latin America		
Caribbean countries, Mexico, and Central America	**52 55 35 3610**	**52 55 66 2308**
Brazil	**0 800 704 9004** or **55 11 5070 9654**	**55 11 5070 9694/95**
Argentina	**800 666 0096**	**55 11 5070 9694/95**
Chile	**1230 020 9102**	**55 11 5070 9694/95**
Uruguay	**0004 055 654**	**55 11 5070 9694/95**

To Reach Technical Support Through the Applied Biosystems Web Site

At the Applied Biosystems web site, you can search through frequently asked questions (FAQs) or a solution database, or you can submit a question directly to Technical Support.

Search FAQs

To search for FAQs:

Step	Action
1	Go to **http://www.appliedbiosystems.com**
2	Click **SERVICES & SUPPORT** at the top of the page, then click **Frequently Asked Questions**.
3	Click you geographic region for the product area of interest.
4	Follow the instructions under the **Frequently Asked Questions** section (1) to display a list of FAQs for your area of interest.

Search the Solution Database

To search for solutions to problems using the Solution Database:

Step	Action
1	Go to **http://www.appliedbiosystems.com**
2	Click **SERVICES & SUPPORT** at the top of the page, then click **Frequently Asked Questions**.
3	Follow the instructions under the **Search the Solution Database** section (2) to find a solution to your problem.

Submit a Question

To submit a question directly to Technical Support:

1	Go to **http://www.appliedbiosystems.com**
2	Click **SERVICES & SUPPORT** at the top of the page, then click **Frequently Asked Questions**.
3	In the **Personal Assistance – E-Mail Support** section (3), click **Ask Us RIGHT NOW**.
4	In the displayed form, enter the requested information and your question, then click **Ask Us RIGHT NOW**. Within 24 to 48 hours, you will receive an e-mail reply to your question from an Applied Biosystems technical expert.

To Obtain Technical Documents

You can obtain technical documents, such as Applied Biosystems user documents, MSDSs, certificates of analysis, and other related documents for free, 24 hours a day. You can obtain documents:

- By telephone
- Through the Applied Biosystems web site

Ordering Documents by Telephone

To order documents by telephone:

1	From the U.S. or Canada, dial **1.800.487.6809**, or from outside the U.S. and Canada, dial **1.858.712.0317**.
2	Follow the voice instructions to order documents (for delivery by fax). **Note** There is a limit of five documents per fax request.

Obtaining Documents Through the Web Site

To view, download, or order documents through the Applied Biosystems web site:

Step	Action
1	Go to **http://www.appliedbiosystems.com**
2	Click **SERVICES & SUPPORT** at the top of the page, then click **Documents on Demand**.
3	In the search form, enter and select search criteria, then click **Search** at the bottom of the page.
4	In the results screen, do any of the following: ♦ Click the pdf icon to view a PDF version of the document. ♦ Right-click the pdf icon, then select **Save Target As** to download a copy of the PDF file. ♦ Select the **Fax** check box, then click **Deliver Selected Documents Now** to have the document faxed to you. ♦ Select the **Email** check box, then click **Deliver Selected Documents Now** to have the document (PDF format) e-mailed to you. **Note** There is a limit of five documents per fax request, but no limit on the number of documents per e-mail request.

To Obtain Customer Training Information

To obtain Applied Biosystems training information:

Step	Action
1	Go to **http://www.appliedbiosystems.com**
2	Click **SERVICES & SUPPORT** at the top of the page, then click **Training**.

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Worldwide Sales and Support

Applied Biosystems vast distribution and service network, composed of highly trained support and applications personnel, reaches 150 countries on six continents. For sales office locations and technical support, please call our local office or refer to our Web site at **www.appliedbiosystems.com**.

Applied Biosystems is committed to providing the world's leading technology and information for life scientists.

Headquarters
850 Lincoln Centre Drive
Foster City, CA 94404 USA
Phone: +1 650.638.5800
Toll Free (In North America): +1 800.345.5224
Fax: +1 650.638.5884

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